## What is Claimed:

A resource management system for a host computer, comprising:

 a resource database for storing indices to system resources of said host computer;
 a resource management software application that assigns system resources of said host computer and maintains a memory allocation page map of said resource database including indices to the assigned system resources in said resource database,

wherein said memory allocation page map is organized according to a tiered page size model including a hierarchy of scales using  $2^x$  as a scaling factor whereby an index page at each tiered page size level may allocate  $2^x$  memory blocks at a size of the next lower tiered page size level.

- 2. The resource management system of claim 1, wherein said resource management software application stores a descriptor for each assigned system resource at an index [G,M,K] in said memory allocation page map defined as  $Mem(G,M,K) = ((G*2^{10} + M)*2^{10} + K)*2^{10}*(word size)$ , where word size is a power of 2.
- 3. The resource management system of claim 2, wherein x=10 and wherein a descriptor is stored in said memory allocation page map as a 32 bit index (2, 10, 10, 10) into a map of 4k pages that identifies the descriptor with said index, where a first bit indicates suballocation in smaller pages and three successive  $2^{10}$  values identify scaled pages.
- 4. A method of managing memory of a host computer, comprising the steps of: storing indices to system resources of said host computer in a resource database; maintaining a memory allocation page map of said resource database including indices to assigned system resources in said resource database; and

organizing said memory allocation page map according to a tiered page size model including a hierarchy of scales using  $2^x$  as a scaling factor whereby an index page at each tiered page size level may allocate  $2^x$  memory blocks at a size of the next lower tiered page size level.

5. The method of claim 4, further comprising the step of storing a descriptor for each assigned system resource at an index [G,M,K] in said memory allocation page map defined as  $Mem(G,M,K) = ((G*2^{10} + M)*2^{10} + K)*2^{10}*(word size)$ , where word size is a power of 2.

WO 2005/036806 PCT/US2004/033527

6. The method of claim 5, wherein x=10 and said storing step comprises storing a descriptor in said memory allocation page map as a 32 bit index (2, 10, 10, 10) into a map of 4k pages that identifies the descriptor with said index, where a first bit indicates suballocation in smaller pages and three successive  $2^{10}$  values identify scaled pages.